

FORM PTO-1390 (Modified) U.S. PATENT AND TRADEMARK OFFICE; U.S. DEPARTMENT OF COMMERCE  
(REV. 9-2006)TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A SUBMISSION UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER

873.0157.U1(US)

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

10/590,671

INTERNATIONAL APPLICATION NO.  
PCT/US05/06132INTERNATIONAL FILING DATE  
2/23/2005PRIORITY DATE CLAIMED  
2/27/2004

## TITLE OF INVENTION

Constrained Optimization Based MIMO LMMSE-SIC Receiver for CDMA Downlink

## APPLICANT(S) FOR DO/EO/US

Zhang et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☐ This is a **FIRST** submission of items concerning a submission under 35 U.S.C. 371.
2. ☒ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a submission under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (25) indicated below.
4. ☐ The US has been elected (Article 31).
5. ☐ A copy of the International Application as filed (35 U.S.C. 371 (c)(2))
  - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
  - a. ☐ is attached hereto.
  - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A copy of the International Search Report (PCT/ISA/210).

## Items 13 to 23 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☐ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ An Application Data Sheet under 37 CFR 1.76.
18. ☐ A substitute specification.
19. ☐ A power of attorney and/or change of address letter.
20. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 37 CFR 1.821 - 1.825.
21. ☐ A second copy of the published International Application under 35 U.S.C. 154(d)(4).
22. ☐ A second copy of the English language translation of the International Application under 35 U.S.C. 154(d)(4).
23. ☐ Express Mail Label No.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

U.S. APPLICATION NO (if known, see 37 CFR 1.5) <b>10/590,671</b>	INTERNATIONAL APPLICATION NO. <b>PCT/US05/06132</b>	ATTORNEY'S DOCKET NUMBER <b>873.0157.U1(US)</b>
24. Other items or information:		
The following fees have been submitted:		<b>CALCULATIONS    PTO USE</b>
25. <input type="checkbox"/> Basic national fee (37 CFR 1.492(a)). . . . . \$300		\$      \$0.00
26. <input type="checkbox"/> Examination fee (37 CFR 1.492(c)) If the written opinion prepared by ISA/US or the international preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4). . . \$0 All other situations. . . . . \$200		\$      \$0.00
27. <input type="checkbox"/> Search fee (37 CFR 1.492(b)) If the written opinion of the ISA/US or the International preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4). . . \$0 Search fee (37 CFR 1.445(a)(2)) has been paid on the international application to the USPTO as an International Searching Authority. . . . . \$100 International Search Report prepared by an ISA other than the US and provided to the Office or previously communicated to the US by the IB. . . . . \$400 All other situations. . . . . \$500		\$      \$0.00
<b>TOTAL OF 25, 26 and 27 =</b>		\$      \$0.00
<input type="checkbox"/> Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing in compliance with 37 CFR 1.821(c) or (e) in an electronic medium or computer program listing in an electronic medium) (37 CFR 1.492(j)). The fee is \$250 for each additional 50 sheets of paper or fraction thereof.		
Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof (round up to a whole)
- 100 =	0 /50 =	0
		x \$250.00
		\$      \$0.00
Surcharge of \$130.00 for furnishing any of the search fee, examination fee, or the oath or declaration after the date of commencement of the national stage (37 CFR 1.492(h)).		\$      \$130.00
CLAIMS	NUMBER FILED	NUMBER EXTRA
Total claims	- 20 =	0
Independent claims	- 3 =	0
		x \$200.00
		\$      \$0.00
MULTIPLE DEPENDENT CLAIMS (if applicable) <input type="checkbox"/> + \$360.00		\$      \$0.00
<b>TOTAL OF ABOVE CALCULATIONS =</b>		\$      \$130.00
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. Fees above are reduced by 1/2.		\$      \$0.00
<b>SUBTOTAL =</b>		\$      \$130.00
Processing fee of \$130.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(i)).		\$      \$0.00
<b>TOTAL NATIONAL FEE =</b>		\$      \$130.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40 per property +		\$      \$0.00
<b>TOTAL FEES ENCLOSED =</b>		\$      \$130.00
		Amount to be \$
		Amount to be \$

06/06/2007 MAIL PAYS 00000111 10590671

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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

- a. ☒ A check in the amount of \$ \$130.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ to cover the above fees.  
A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-1924. A duplicate copy of this sheet is enclosed.
- d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038. The PTO-2038 should only be mailed or faxed to the USPTO. However, when paying the basic national fee, the PTO-2038 may NOT be faxed to the USPTO.

**ADVISORY:** If filing by EFS-Web, do **NOT** attach the PTO-2038 form as a PDF along with your EFS-Web submission.  
Please

be advised that this is not recommended and by doing so your **credit card information may be displayed via PAIR**. To

**NOTE:** Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.

SEND ALL CORRESPONDENCE TO:

Harrington & Smith, PC  
4 Research Drive  
Shelton, CT 06484-6212  
Customer No. 29683

SIGNATURE 

Harry F. Smith

NAME

32,493

REGISTRATION NUMBER

May 29, 2007

DATE

*PCT*  
*\$*

## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
 United States Patent and Trademark Office  
 Address: COMMISSIONER FOR PATENTS  
 P.O. Box 1450  
 Alexandria, Virginia 22313-1450  
 www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/590,671	Jianzhong Zhang	873.0157.U1(US)

INTERNATIONAL APPLICATION NO.

PCT/US05/06132

29683  
 HARRINGTON & SMITH, PC  
 4 RESEARCH DRIVE  
 SHELTON, CT 06484-6212

US ACTION

DUE DATE 7/1/07PAPER DATED 5/1/07OA FINAL 4/1/07MSG PT DWGAPPEAL ISSUE FEEOTHER 

I.A. FILING DATE

02/23/2005

PRIORITY DATE

02/27/2004

CONFIRMATION NO. 2837

371 FORMALITIES LETTER



\*OC000000023604153\*

Date Mailed: 05/01/2007

### NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C. 371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as a Designated / Elected Office (37 CFR 1.495).

- Copy of the International Application filed on 08/24/2006
- Copy of the International Search Report filed on 08/24/2006
- Preliminary Amendments filed on 08/24/2006
- Information Disclosure Statements filed on 08/24/2006
- U.S. Basic National Fees filed on 08/24/2006
- Priority Documents filed on 08/24/2006
- Specification filed on 08/24/2006
- Claims filed on 08/24/2006
- Abstracts filed on 08/24/2006
- Drawings filed on 08/24/2006

The applicant needs to satisfy supplemental fees problems indicated below.

The following items **MUST** be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:

- Oath or declaration of the inventors, in compliance with 37 CFR 1.497(a) and (b), identifying the application by the International application number and international filing date.
- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.492(h) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.

SUMMARY OF FEES DUE:

**RECEIVED**

JUN 03 2007

HARRINGTON &amp; SMITH, PC

Total additional fees required for this application is \$130 for a Large Entity:

- \$130 Surcharge.

**ALL OF THE ITEMS SET FORTH ABOVE MUST BE SUBMITTED WITHIN TWO (2) MONTHS FROM THE DATE OF THIS NOTICE OR BY 32 MONTHS FROM THE PRIORITY DATE FOR THE APPLICATION, WHICHEVER IS LATER. FAILURE TO PROPERLY RESPOND WILL RESULT IN ABANDONMENT.**

The time period set above may be extended by filing a petition and fee for extension of time under the provisions of 37 CFR 1.136(a).

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.  
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at <http://www.uspto.gov/ebc>.

**If you are not using EFS-Web to submit your reply, you must include a copy of this notice.**

DEBORAH D WILLIAMS

Telephone: (703) 308-9140 EXT 205

**PART 1 - ATTORNEY/APPLICANT COPY**

U.S. APPLICATION NUMBER NO.	INTERNATIONAL APPLICATION NO.	ATTY. DOCKET NO.
10/590,671	PCT/US05/06132	873.0157.U1(US)

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of:

Applicant: Zhang et al.

Serial No.: 10/590,671

Filed: 2/23/2005

Title: Constrained Optimization Based MIMO LMMSE-SIC Receiver for CDMA Downlink

Attorney Docket No.: 873.0157.U1(US)

Certificate of Mailing

I hereby certify that the following correspondence:

Transmittal Letter to U.S. Designated/Elected Office

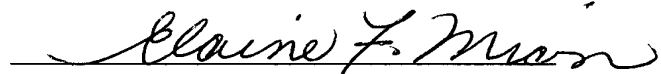
Declaration and Power of Attorney

Check for \$130.00

is being deposited with the United States Postal Service, on the date shown below, first class mail, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, Mail Stop PCT

May 29, 2007

Date



Elaine F. Mian